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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,934	09/23/2003	Arie Van Zon	TS1260 (US)	3364
23632	7590	11/18/2005	EXAMINER	
SHELL OIL COMPANY P O BOX 2463 HOUSTON, TX 772522463			DANG, THUAN D	
			ART UNIT	PAPER NUMBER
			1764	
DATE MAILED: 11/18/2005				

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10/668 934

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/668,934  
Filing Date: September 23, 2003  
Appellant(s): VAN ZON ET AL.

\_\_\_\_\_  
Donald F. Haas  
For Appellant

**MAILED**  
NOV 18 2005  
**GROUP 1700**

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 11/01/2005 appealing from the Office action mailed 6/13/2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

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The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The claimed process can be interpreted as a process of oligomerization of ethylene in a reactor comprising liquid and gas phase in the presence of a complex selected from the group consisting of nickel, palladium, cobalt, titanium, zirconium, hafnium, vanadium, chromium, molybdenum, and tungsten. The heat of the reaction is removed by a heat exchanger which is positioned in the gas phase in the reactor and not in direct with the liquid phase, using least part of the gas phase as a coolant medium.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

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WO 00/15646	Gibson et al	3-2000
US 3,461,109	Hinton et al	8-1969
EP 0608447	Reagan et al	8-1994

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1 and 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gibson et al (WO 00/15646) in view of Hinton et al (3,461,109).

Gibson discloses a process of polymerization of ethylene in a reactor containing a Cobalt complex catalyst, a liquid phase, and a gas phase of which is heat-exchanged (the abstract; page 9, lines 24-25; page 12, lines 10-25; page 13, lines 10-25).

It appears that Gibson does not disclose using a heat-exchanger located in the gas phase inside the reactor (see entire patent for details). However, Hinton discloses a polymerization process having a reactor containing a heat-exchanger in the gas phase of the reactor (col. 1, the abstract, the figure).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Gibson process by moving the heat-exchanger from outside to inside of the reactor since Hinton teaches that a reactor having an inside heat exchanger outperforms the same with an outside heat exchanger (col. 2, lines 11-32).

The difference is that while applicants claim an oligomerization (also a polymerization) to produce alpha-olefin oligomer, Gibson disclose producing polymer (see entire patent for details). However, as known, oligomerization (low-weight product) is also a polymerization

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(high-weight product) and as disclosed on page 12, lines 2-5 of Gibson, the average molecular weight of the produced polymer can be controlled.

It would have been obvious to one having ordinary skill in the art who wishes to produce low-weight polymer (such as oligomers) at the time the invention was made to have modified the Gibson process by selecting an appropriate temperature to obtain the desired oligomers.

Note that inert gas such as pentane is also present the reaction of Gibson (page 13, lines 10-25).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gibson et al (WO 00/15646) in view of Hinton et al (3,461,109) further in view of Reagan (EP 0608447).

Gibson discloses a process as discussed above.

Gibson does not disclose using a catalyst containing metals such as chromium as called for in claim 2. However, Reagan discloses a complex of chromium or titanium can be used as a catalyst for oligomerizing or polymerizing ethylene (the abstract; page 8, line 55).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Gibson process by using the Reagan catalyst which is shown to be effective to catalyze oligomerization process.

#### **(10) Response to Argument**

Appellants argue that the examiner's reference at page 12 of the specification of Gibson is only in connection with a gas phase polymerization. On page 12, lines 10-23 Gibson teaches a polymerization process contains both liquid and gas phases. On page 13, line 22-23, Gibson discloses how the hot gas is cooled.

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Appellants argue that page 9, lines 17-18 of Gibson discloses four types of reaction processes for producing ethylene polymers and the gas phase is carried out exactly as is implied, i.e., in gas phase. However, as disclosed by Gibson, on page 12, lines 10-23, the Gibson gas phase process is operated in the presence of both liquid and gas.

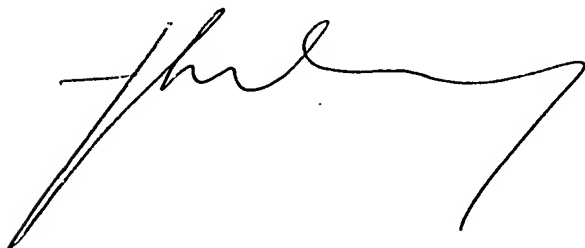
Appellants argue that the examiner's description of Hinton is incomplete since Hinton teaches a process for polymerization of conjugated dienes (dienes versus olefins). The two references disclose entirely different polymerization processes (gas phase versus liquid phase). The argument is not persuasive since Hinton discloses polymerizing olefins such as ethylene (col. 4, lines 16-20) and both discloses the reaction has both phases as discussed above. Also is known that diene is also an olefin (di-olefin).

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Examiner Thuan D Dang


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Conferees:

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